



Perspectives on optical scanning

The bottleneck in business is communication. And the existence of that bottleneck is a startling contradiction. Consider. In a modern business, you will find computers and high speed printers that can handle all kinds of data at incredible speeds. But the electronic speed and accuracy of the machine are often held back by the painfully slow, often inaccurate human factor: the keypunch or tape punch operator. Every bit of data fed to a computer must, at some time, be translated from human language to machine language. Until now, this critical operation, the bottleneck in business communication, has involved human operators with human limitations. Now, business stands on the threshold of an important breakthrough in automated information handling. The breakthrough? Optical scanning. This brochure is designed to give you the basic facts about optical scanning...and to provide you with fresh perspectives on how it can virtually revolutionize your information and data handling system.





The machine with the eye is the optical scanner. In manual card and tape punching, the key factor is the operator's eye. It sees the human language on the document. It sees the image of a letter. The human brain identifies the image as a character. And the brain sends a signal to the operator's finger to punch the right character key. The same function is performed by the optical scanner. For the optical scanner, in plain language, is simply a machine that reads. It can convert coding or characters into machine usable material (cards, paper tape, or magnetic tape); or it can transmit the reading directly into the computer. The process is similar to human vision. A component of the optical scanner...called the photomultiplier...is activated by what the electronic eye sees. It, in turn, translates the visual impulses into electronic impulses. And those impulses activate card or tape producing equipment...or transmit directly to the computer.

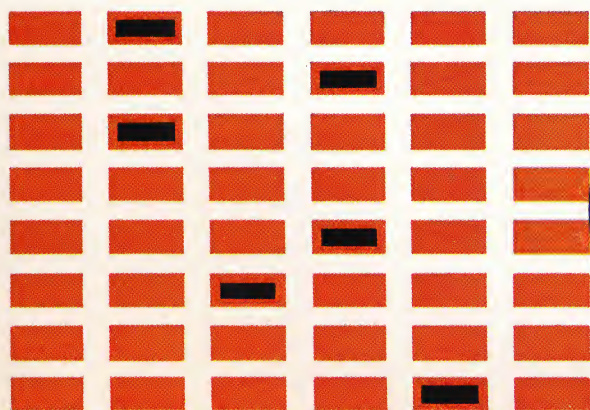
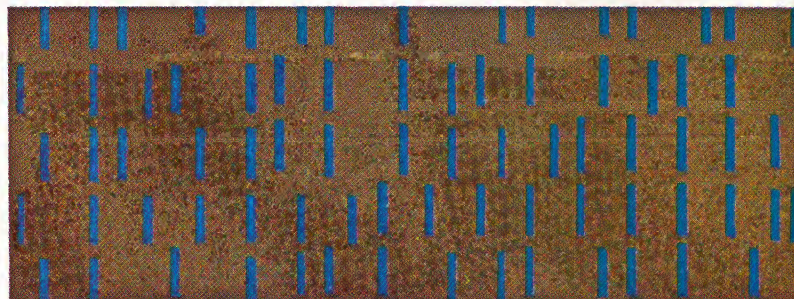


Character scanning is one of two methods used in optical scanning. In character scanning, the light source...or eye of the scanner...passes over a form. As a character to be scanned is encountered, its shape is analyzed, bit by bit. These bits are accumulated by the scanner and compared with information stored in its memory. Thus the character is recognized by its over-all shape.



In mark scanning, the scanner looks at a field rather than a character, and recognizes the placement of a mark within that field. Here's how it works: The person who puts the information on the form makes a mark in a specific place. The scanner's eye responds to the mark because the mark absorbs and does not reflect the light from the scanner. The response triggers a specific value based on the location of the mark within the field.

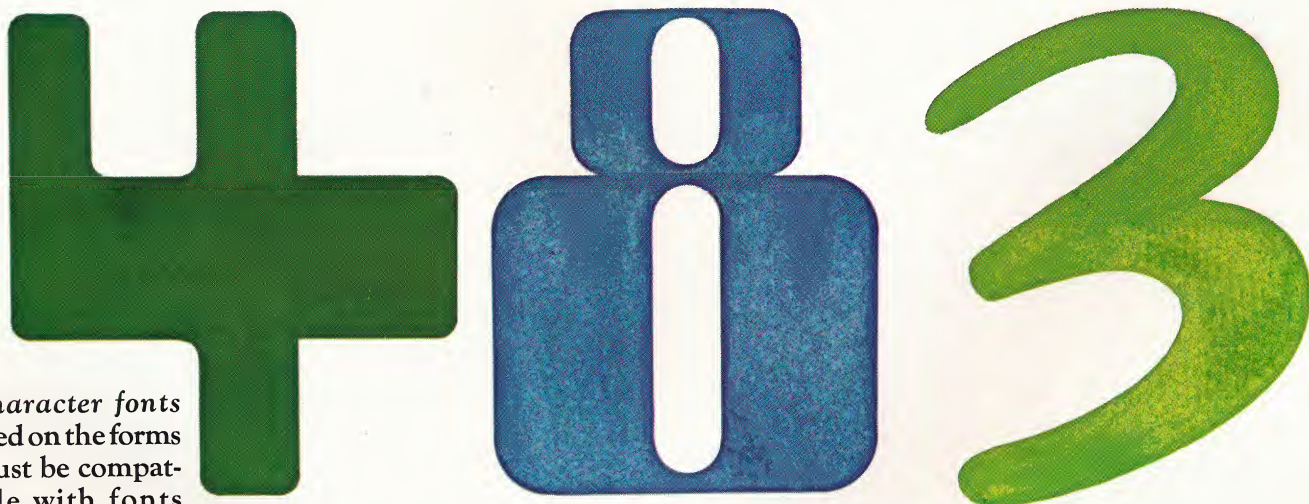
Bar code scanning is similar to mark reading in that it employs a mark or combination of marks rather than a human-readable character.



Some scanners read one, two or several lines of characters; some simply read marks within a specified field; some do both. There are several different models available for each type of scanning. They vary in their abilities to read alphabetic, numeric and/or special symbol information exclusively or in various combinations.



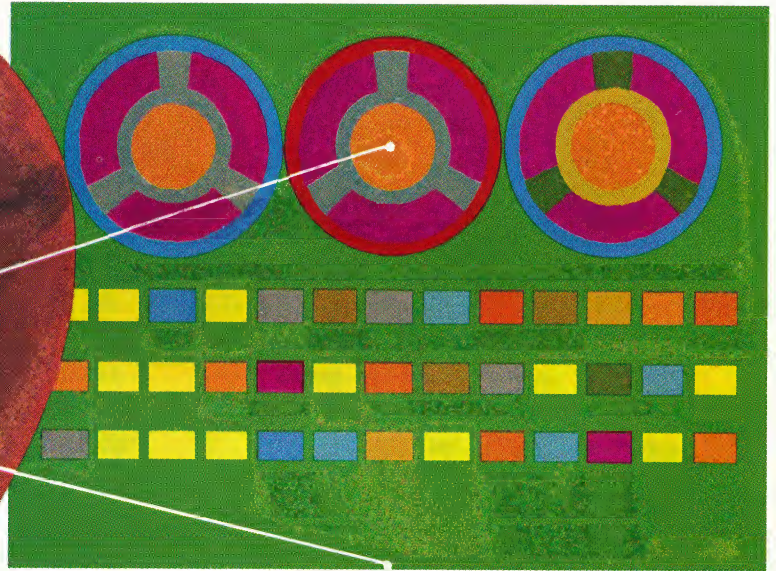
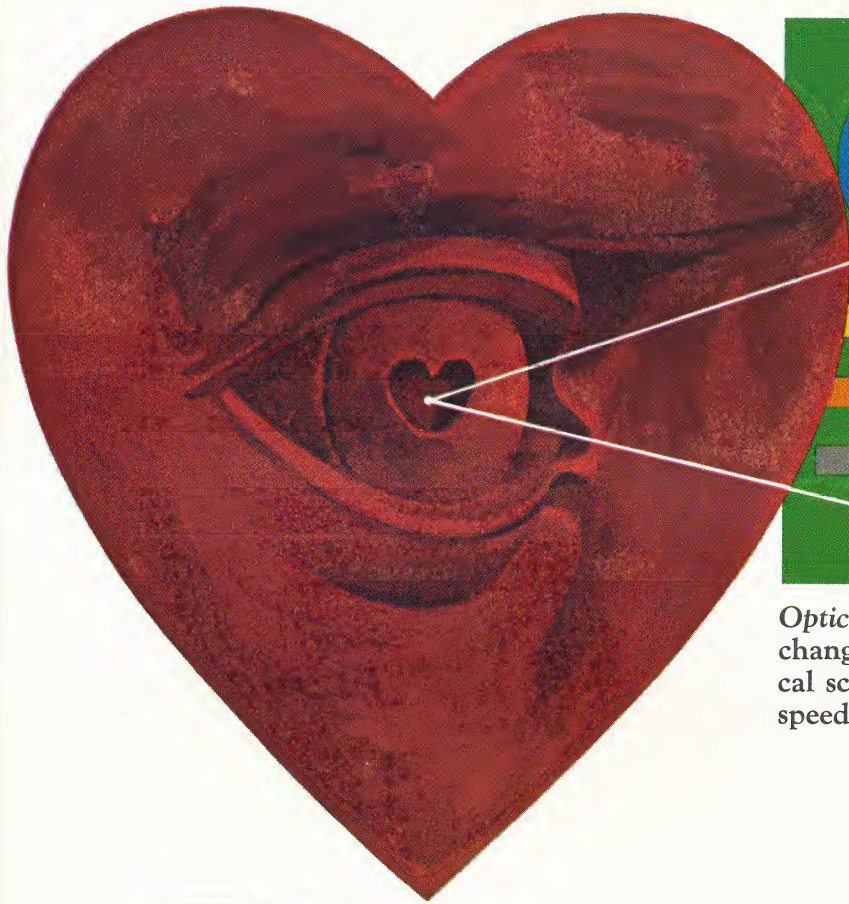
The optical scanner must have light to see, just as the human eye must have light. A scanner may have a fixed light (and a moving document), or a moving light beam (and a stationary document). With fixed light source scanners, the form is passed through the scanner one time. Either all the data is read and translated, or the form is rejected. The rejected form is passed through the scanner again. But if the form is consistently rejected, then it must be handled manually. With moving light source scanners, the light beam sweeping the form may repeat the sweep, if characters are not recognized at first. But, again, unreadable forms must eventually be processed by hand.



Character fonts used on the forms must be compatible with fonts

*programmed into the scanner. At present, each scanner has specific fonts which are readable. Other fonts are not recognized by the scanner, and the form will be rejected. A scanner-readable font can be placed on ordinary business machines, such as typewriters, bookkeeping machines and high speed printers. The American Standards Association has assigned a subcommittee the job of developing a single font, readable by *all* scanners. The Standard Register Company is represented on this subcommittee.*

The advantages of optical scanning include economy. Within the chain of EDP, optical scanning eliminates the expensive, time-consuming job of manual card punching and tape punching. Manpower savings are significant. And even more important, record keeping functions can be accelerated for other gains. For example, faster billing can give management earlier use of working capital.



Optical scanning is flexible and versatile. Often no major change in systems or procedures is required to install optical scanning. It fits into existing systems. And it increases speed and accuracy in hundreds of functions.



Speed is a prime advantage. Business has computerized to obtain electronic speed. Optical scanning can get data into a computer faster and, thus, computers can be used to better advantage. An example of optical scanning speed: in one hour, a scanner can process as many forms as 150 keypunch operators!



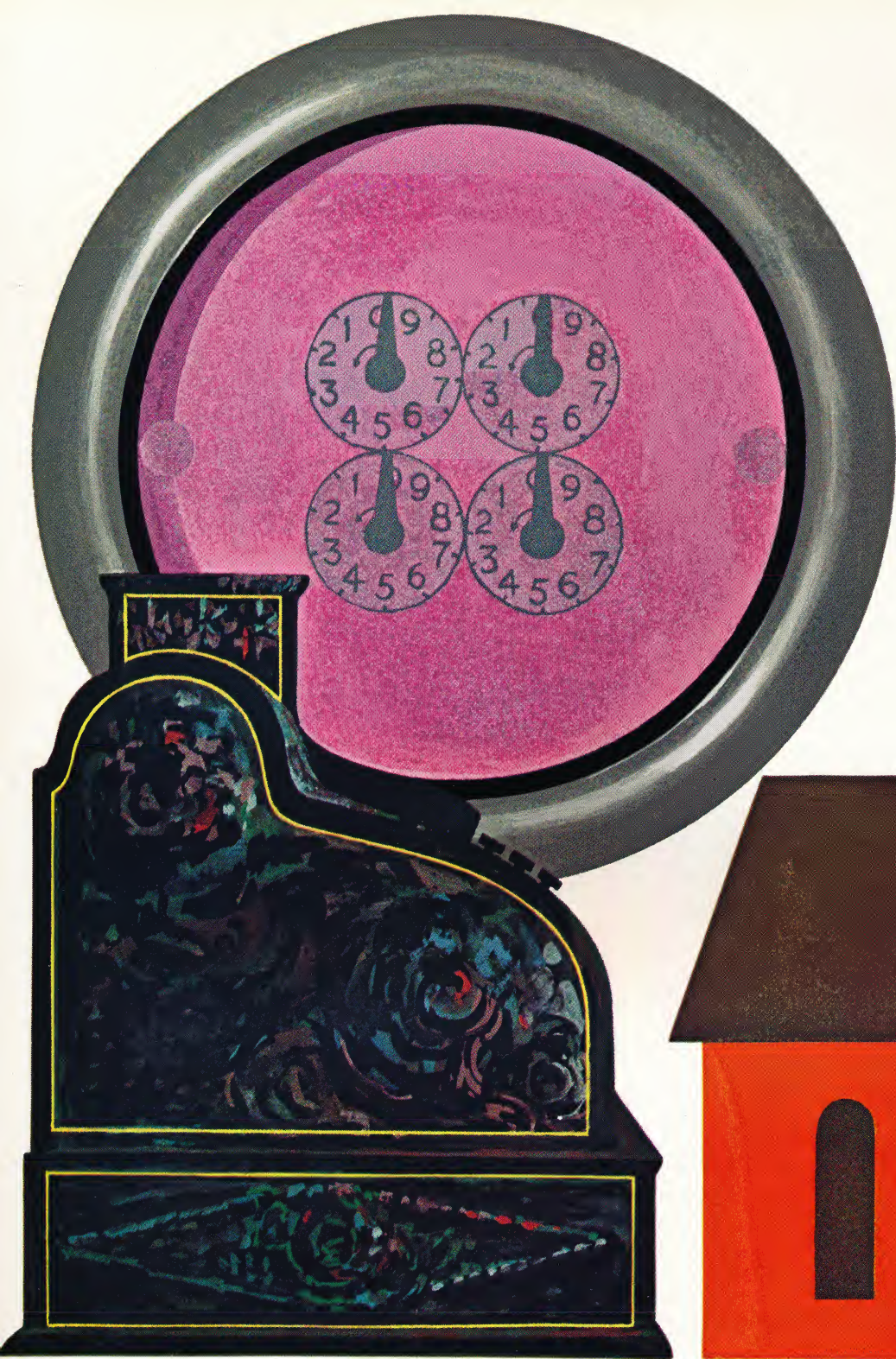
Accuracy is vitally important. Human operators can become tired or careless. When they make a mistake, it can have far-reaching effects. Scanning equipment—functioning correctly and with adequate forms—will automatically eliminate errors that would otherwise be fed to the computer.



Uniformity is another advantage. Optical scanning encourages standardization of documents. It demands precise forms design.

Optical scanning helps your business grow. It increases the ability of computers to handle and process data. Thus, management can better use the extraordinary advantages of computers to conduct present business—and to prepare for future business needs.





Optical scanning is a working tool in hundreds of applications. Utilities, for instance. They use scanners in connection with meter reading, billing, and special notices...including turn-off and delinquent accounts.



Retailers put optical scanning to work processing price tickets, stock inventory forms, and cash register tapes. Educators use optical scanning in enrolling students, recording and issuing grades, scoring tests.



Insurance companies have discovered how optical scanning can assist in processing premium notices, updating accounts, issuing dividend checks.



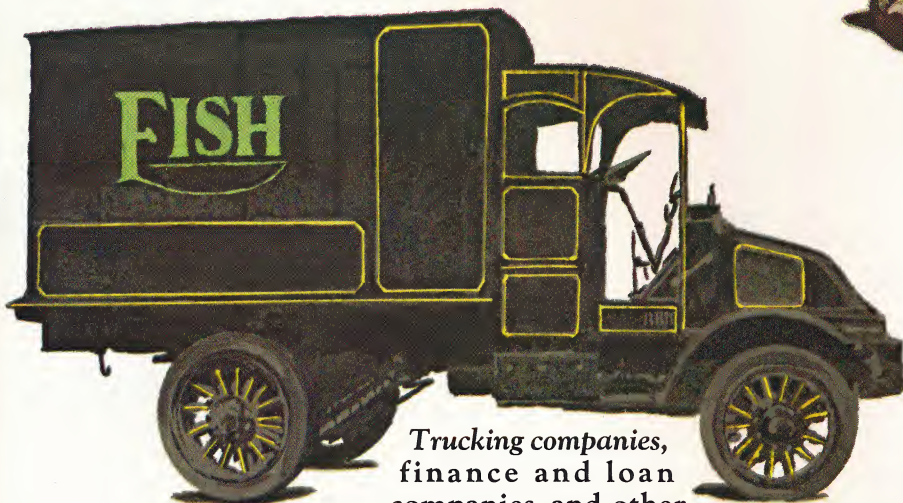
Home delivery businesses speed their billing function by scanning customer tickets marked by route salesmen.



Bankers have found optical scanning profitable and practical for applications for new customer services that require re-entry documents.



Airline ticket accounting, as well as that of railroads ...is handled faster, more economically, more accurately with optical scanning.



Trucking companies, finance and loan companies, and other types of business use optical scanning to update revenue accounting.



Dairies, publishers, book clubs, record clubs, government...almost any organization with a continuing flow of data for computer consumption...can find new ways to make optical scanners improve efficiency. And the world of optical scanning is constantly growing larger, with language translation by optical scanner a certainty in the future.



Illustrator Bob Brown



If there are five keypunch operators handling documents for your system, chances are optical scanning can save you money. The present theoretical break-even point in terms of volume is approximately 10,000 documents per day. At this level — or higher — odds are that optical scanning will save you both time and money. Below this volume, manual card punching or tape punching is probably cheaper. However, there are important exceptions to these rules-of-thumb. For instance, any business with periodic high-volume jobs — such as dividend checks, or “turn-around” documents — can often realize a savings with optical scanning.

There's more to optical scanning than the optical scanner. Because of the fantastic speed (up to 90,000 documents per hour), forms quality is a critical factor in determining whether a scanner succeeds or fails.

NAME ADDRESS

Route Number

FOR REGULAR AGENSIES ONLY

Name of Relative or Friend

Name of Head of Family

Date

Family Mass Protection All Companies

ADJUSTMENT SPIN

Date	Amount of Dividend (D) or Ten Percent Return (R)	Amount Returned (-) Paid (+)	Amount Applied to Premium	When Returned Cash Check or Stamp

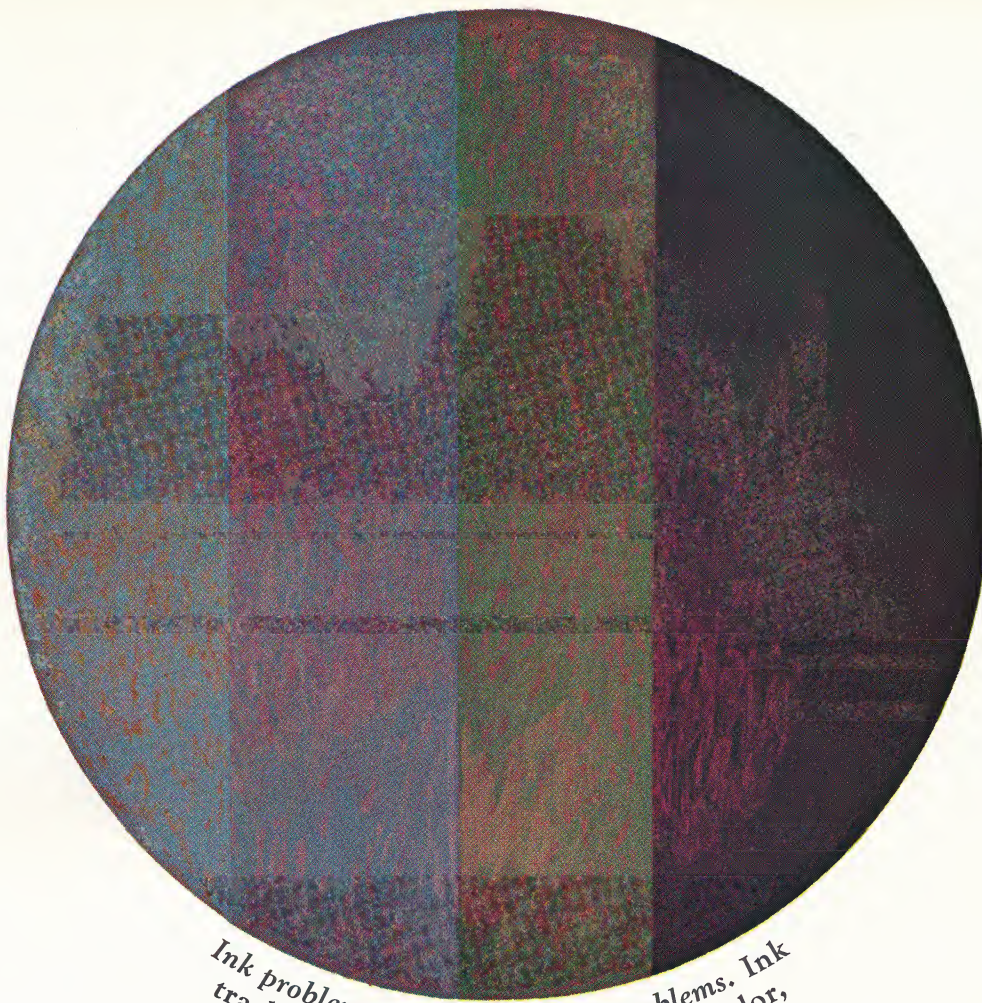
TOTAL PREMIUM

JAN. 1964				MAR.				APR.				MAY				JUNE			
6	13	20	27	6	13	20	27	4	11	18	25	1	8	15	22	29			

Form layout must be compatible with the total EDP system...and with the scanner. Scanners are sensitive...and unless there's a perfect match between the form and the scanner's capabilities...risk of failure is great. Existing forms...which work perfectly in the rest of the system...may not work against the supercritical requirements of scanning.



Extraneous material...ink specks, carbon smudge, ribbon marks...can be disastrous. The scanner may reject forms with smudges...or, worse yet, misread characters. Decorative borders must meet close tolerances.



Ink problems mean downtime problems. Ink tracking must be avoided. And the color, density, and formulation of reflective and non-reflective inks must be carefully selected.

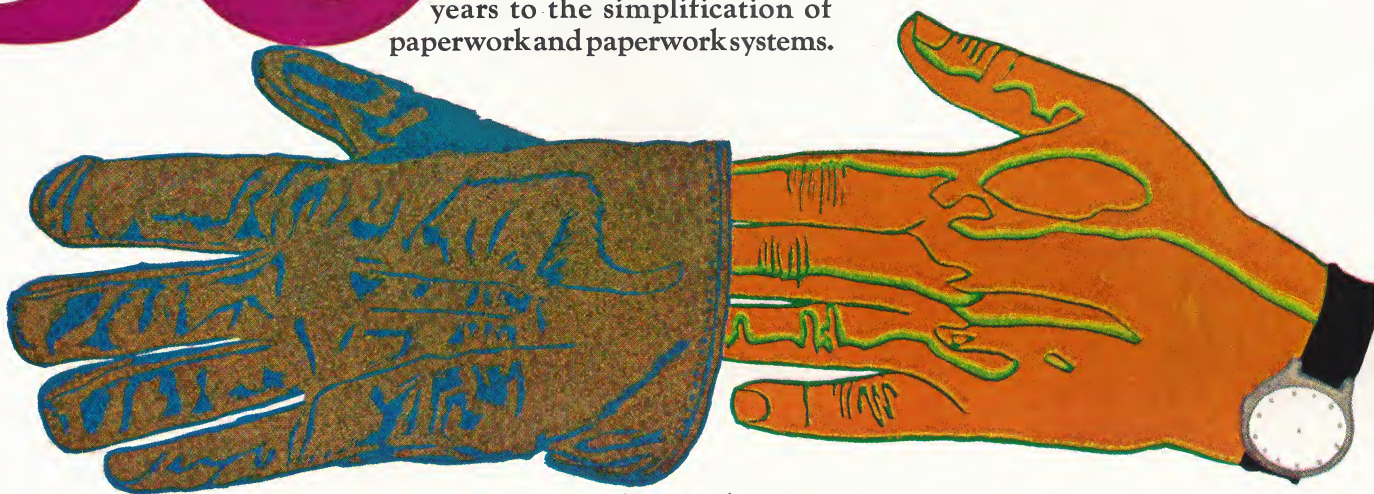
Pre-printed data such as repetitive or consecutive numbers must be in the right position and of proper shape to match the scanner's ability to read. Equally critical is the proximity between each character and the field mark, document edges and other printing on the form.



Dirty paper is absolutely unusable. You may not see the imperfection with your eye but the scanner will...even tiny bits of bark or other waste material in the paper can cause rejects or misreads. Papers have to be of the finest quality. They must be dimensionally stable. They must be consistent and uniform. There must be maximum contrast between character and background. To make sure these requirements are met, the paper can be selected only after consideration of specific needs in registration, alignment, color, weight, feeding, perforation, and durability.

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Where to get help in optical scanning. Your first impulse—and correctly so—would be to contact one of the machine manufacturers who make optical scanners. But don't overlook The Standard Register Company. We've devoted more than 50 years to the simplification of paperwork and paperwork systems.



We've worked hand-in-glove with machine manufacturers on thousands of EDP installations. And we've gained a great deal of experience in optical scanning. Specifically in the area of optical scanning forms, we have the experience to help you solve your problems.



Our forms are
Machine Mated
...developed to
precise specifications
to operate
freely over properly
adjusted machines.



Guaranteed

The only written guarantee in the forms industry backs every single Machine Mated form — a guarantee which covers any and all problems arising from forms imperfections. With our standards, such problems seldom occur, but when they do, you're protected.

The real payoff is a result of precise forms plus capable representatives. Our men are trained to help make your optical scanning equipment prove out in application. They've had experience with equipment, processes, and systems similar to yours.



Standard Register's complete facilities offer another plus. They include engineering, research, national service organization and technical assistance in systems analysis and forms design. So when you consider adding optical scanning to your EDP system, call on Standard Register. We're old hands in this new business.

At Standard Register, we've acquired a reputation for leadership. But our reputation is no better than our ability to be first with forms knowledge. This booklet is another example of our continuing effort to provide business management with important information about paperwork simplification. Specifically, it is designed to help you better understand optical scanning—and how it can help your company increase profits through faster, more efficient data processing.

**THE STANDARD REGISTER COMPANY
DAYTON, OHIO 45401**

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